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THE EDITORS SAY:

Hair Curling Research

In a recent Congressional hearing on education Rear Admiral Hyman G. Rickover said that the home-permanent-wave industry for next year had budgeted a sum amounting to 2 cents per United States female for research into the ways of improving the looks of human hair. Meanwhile, the Admiral pointed out, the whole nation was spending only 3 cents per capita for research into those "distressing things that go inside the human head." Admiral Rickover had every intention of shocking his audience into recognizing that a negligible amount of money is being expended in the educational research field. There is little doubt that he knows the importance of research, not only in regard to its importance to the Navy but also to education as well. We agree that expenditures for educational research are small and should be increased vastly. However, we should not be content to say that more money is needed.

Glancing at the California state budget, California spent last year for educational research approximately 4 cents per pupil in the public schools. If you add to this figure the amount spent by school districts, it might be concluded that although educational research is lagging behind industrial research, still educational research is obtaining a sizable portion of the schools' budget. This is not an accurate conclusion. To compare educational and industrial research it is necessary to analyze the functions of these research departments. For example, the hair curling research departments would have as their primary function developing better, safer, faster, and, perhaps, cheaper curling fluids, neutralizers, papers, and curlers. The research departments do not produce, sell, interpret, or account for the existing product — except incidentally. Industrial research people are assigned to find new and better ways of curling hair, and to do this, industry selects highly skilled, experienced, and creative people to produce a better product.

In contrast to this situation, the educational research departments have as their functions accounting for pupils, administering of tests, interpreting the schools to the public, working with problem cases, and evaluating the work of pupils and teachers. Only incidentally do these departments have time for devising experiments or seeking new ways of developing a better educational program. The money allotted in educational research budgets is marked for operational expenses, not for experimentation, and if there is

(Continued on page 96)

Determination of Structural Pattern In a Population of Comparable Governmental or Demographic Units

FRANK A. YETT

The problems of governmental finance have motivated extensive analytical treatment of the likenesses and differences among comparable governmental or demographic units. This study was concerned with the design and execution of a general method by which those likenesses and differences can be quantitatively determined. The study used the 58 counties of California as an experimental population. The most recent general United States census year, 1950, was chosen as the data year because of the large mass of data which this census provided in contrast to inter-censal years.

The general method developed may be divided into three parts:

1. Collection of data were taken from state and federal census publications and the reports and findings of authorized public agencies. From these data was designed a sample of variables expressed as index ratios or fractions.

2. Basic interrelationships existing among the members of the population as evidenced by the sample of variables were determined.

3. Quantification of the concept *structural pattern* was accomplished through the design of linear functions of variance. These functions are combined until a set of formulas is determined in which each formula places the population along a standard number scale differently from any other formula. These formulas are termed, *principal dimensions.* The family or set of principal dimensions is called a *structural pattern* of the population. The sets of scores assigned to the population by the principal dimensions are the numerical expressions of that structural pattern.

Collection of Data, Design of a Sample of Variables

With the aid of a systematic listing of descriptive characteristics, source documents were searched for discrete statistics reported in comparable

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Frank A. Yett received his bachelor of science degree from Massachusetts Institute of Technology, his master of arts from Johns Hopkins University, and his doctorate from the University of California at Los Angeles. Dr. Yett has worked with engineering companies and has taught at the secondary, junior college, and collegiate levels. At the present time he is a teacher in the Department of Mathematics, Pasadena City College. This article is based on his doctoral dissertation.

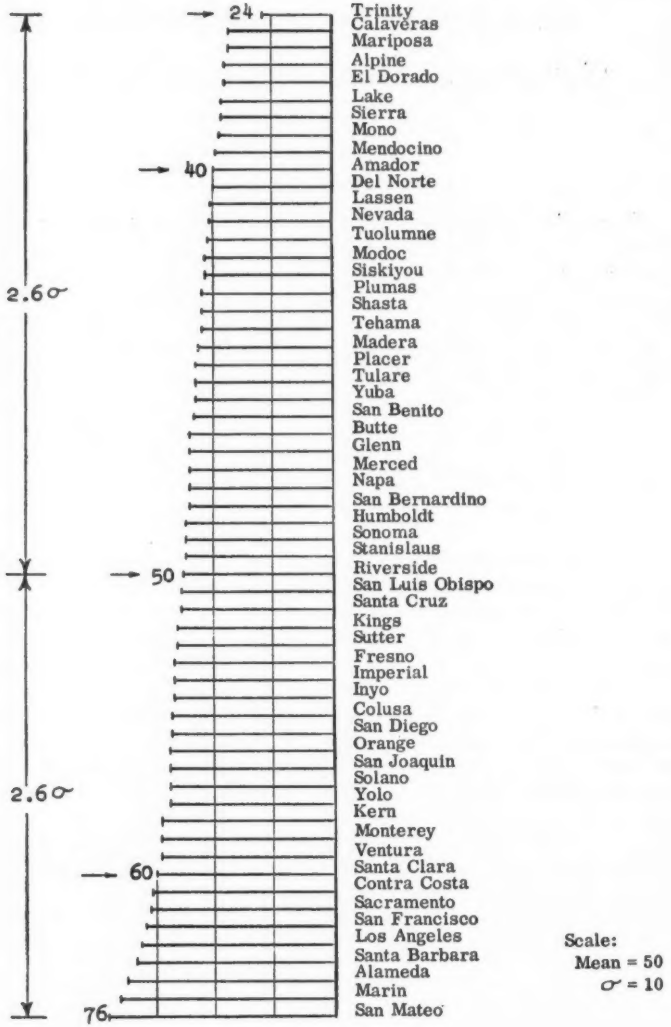

FIGURE 1

Standard Score Criterion Scale Ranking the Counties of California

form for each of the units of population under study. Variables were designed in the form of ratios, or fractions, such as "The Number of Families with Incomes over $5000 per Year *to* the Total Number of Families." For each county of California, 511 such index ratios were computed. The sample of variables included comparable numerical physical-ethnic, employment, income, housing, agricultural, business and industrial, governmental, and geographic descriptions.

Statistical tests were conducted on intercorrelations of the 511 variables which supported the acceptance of the fact that the modes of variation which were present in the total sample of variables were significantly different from the variation one might expect to be present on a chance basis. Controls were effected to reduce spurious correlation to a minimum.

Variables were eliminated which were no more sensitive to one or more modes of variation present in the entire sample than would be expected of the particular variable on a chance basis. The 380 variables remaining were converted to indexes which ranked each county unit on a standard score scale with a mean of 50 and a standard deviation of 10.

Determination of Basic Interrelationships

Admission of any single index to a group of indexes, from which subsequent formulas were computed, was based on a group validity score proposed by Peters and Van Voorhis[1] where the group validity, r_v, is expressed

$$r_v = \sqrt{\frac{(N)(r)}{(N)(r) + (1-r)}}$$

when r is the average intercorrelation of the matrix of correlation values for N measures. For example, if a group validity of +.99 is required, 49 indexes would have to have an average intercorrelation of +.50. Seven major groups of indexes were established among the indexes analyzed, using 201 indexes.

Quantification of the Concept, Structural Pattern

S. S. Wilks[2] has demonstrated that a composite-index function can be constructed from a group of indexes using the extracted first-factor loadings, obtained through multiple factor analysis, which will minimize the generalized variance of all units receiving the same composite-index function score. That is, individual units of the population which are given

[1] Charles C. Peters and Walter R. Van Voorhis, *Statistical Procedures and Their Mathematical Bases*, New York, McGraw-Hill, 1940, p. 195.

[2] *Psychometrika:* III, March 1938, pp. 24-43.

nearly identical scores by such a function will have similar original scores on indexes used to make up the composite-index function.

It is important to realize that the contribution of each index to the determination of the composite-index score is directly proportional to the index's *vector* on the mode of variation represented by the extracted factor. The relative weight of each index is made, not on the basis of *a priori* analyses, but strictly upon the quantitative relationship of the index to the principal variation evidenced by all the indexes making up the composite function.

An extensive re-cycling analysis was applied to the seven composite-index functions. This process resulted in the reduction of these seven functions to three scoring formulas. The distribution of the 58 counties on each of the three scales showed substantially no correlation, and these three distributions were thus termed *principal dimensions.* The sets of scores given each of the counties on the three dimensions make up a numerical expression of the *structural pattern* determined by the 201 indexes used in the analysis.

Results of the Study

Application of the method to an experimental population, the 58 counties of California, demonstrated that the method derives a structural pattern which gives both (1) a qualitative description of the population which groups counties with similar characteristics and identifies "isolates" and (2) a quantitative ranking to the counties on the major characteristics. The scores account mathematically for the likenesses and differences which exist.

One of the dimensions determined by the analysis, referred to as dimension F_{21} in the study, was based on 143 index ratios, each a distinct quantitative description of each county of California. Figure 1 shows the distribution of the 58 counties on the standard score scale with a mean of 50 and a standard deviation of 10.

There are on such a scale no "zero" and no "perfect" scores. It can be expected that only in the most unusual cases would a score be assigned which was less than 20 or more than 80, that is, three standard deviations below or above the mean. The lowest score assigned by this dimension to any county in California was 24 (Trinity) and the highest score assigned was 76 (San Mateo). It should be remembered that these scores reflect *per capita* or *unit* measures.

Among other characteristics, the units with high scores on this scale have high levels of educational attainment, superior income levels, better housing, and a vigorous urban-industrial economy. The units with high scores have smaller proportions of non-industrial workers, fewer low-income families, lower per capita assistance from state sources, and, per capita, financially less burdensome local governments.

Educators will be interested to learn that this dimension, F_{21}, does not correlate with the measure of assessed valuation *per capita* or assessed valuation per unit of average daily attendance (ADA). Neither does it correlate with the amount of actually apportioned equalization aid to elementary or secondary districts per ADA. The ranking given the counties by these index measures disagrees with, or even reverses, that given the counties by F_{21}. See Table I.

TABLE I

Rank Difference Correlation Between F_{21} and Various Indexes
(Data Year, 1950)

Index	*Correlation**
1. *Indexes measuring assessed valuation*	
a) Total assessed valuation of land taxed by the county and assessed by the county or the State Board of Equalization, per person in the county.	−.21
b) Assessed valuation of elementary school districts of the county per elementary average daily attendance, Grades K-8.	+.05
c) Assessed valuation of secondary school districts of the county per secondary average daily attendance, Grades 9-12.	−.20
2. *Indexes derived from apportionment of state school funds*	
a) Actually apportioned equalization aid to elementary districts in the county in dollars in 1950 per elementary average daily attendance, Grades K-8 (San Francisco excluded).	+.23
b) Actually apportioned equalization aid to secondary districts in the county in dollars in 1950 per secondary average daily attendance, Grades 9-12 (San Francisco excluded).	−.41
3. *Indexes concerning school quality*	
a) Per cent of teachers employed in the county holding standard teaching credentials (as opposed to teachers with substandard credentials), 1950.	+.73
b) Per cent of teachers employed in the county holding standard teaching credentials (as opposed to teachers with substandard credentials), 1955.	+.71
4. *Typical indexes of socio-economic potential*	
a) Per cent of families and unrelated individuals in the county earning more than $5000 in 1949.	+.55
b) Ratio of the number of persons 25 years of age and over with a school experience of four years of high school or more, *to* the number of persons 25 years of age and over with a school experience of eight years of elementary school or more.	+.64

* ρ (Rho) $\cong \pm .35$, significant at 1 per cent level of confidence.

Yet, this dimension has a high positive correlation with the per cent of teachers employed in the county holding standard teaching credentials, as opposed to teachers with sub-standard credentials. Dimension F_{21} also has high positive correlation with indexes of the type "Per Cent of Families and Unrelated Individuals in the County Earning More Than $5000 Per Year" or "Fraction of Persons Over 24 Years of Age with at Least Eight Years of Elementary School Who Have Completed High School or More." See Table I.

These findings have important implications if such a dimension can be accepted as a criterion of some major characteristic, perhaps here, as a criterion of socio-economic power. In the case of the dimension, F_{21}, at least some doubt can be cast upon the validity of assessed valuation per student serving as a measure upon which equalization aid is distributed from state funds in California.

Conclusions

The application of the method has demonstrated that the method can be useful in studies where the characteristics of political units or demographic areas are of interest. Both general qualitative and specific quantitative descriptions of the population are made directly available. A great mass of unorganized data is translated into more compact, usable form which does not distort the description given by the counties by the original data. At the expense of some detail, a more understandable comparison is available for the areas involved. The derived data, moreover, are in directly comparable numerical form.

Ruth E. Seeger is the author of a useful booklet published by the Bureau of Educational Research, Ohio State University, and obtainable from the University Press, Columbus 10, for 75 cents each. The title is *Using Library Resources in Educational Research*. The publication explains the library card catalog and other book listings, and then proceeds to discuss specific reference sources and their use. Among the items considered are encyclopedias, indexts and abstracts, government publications, bibliographies, directories, lists of associations and foundations, and dissertations. The major reference works in such fields as educational research methods, educational measurements, audio-visual aids, and curriculum are mentioned and briefly described. This booklet will prove valuable to the seasoned researcher but will have its greatest usefulness as a means of quickly orienting the beginner.

A Note on Activities of Teachers During Childhood and Adolescence

DAVID G. RYANS

To what extent may certain characteristics of teachers be traceable to behavior patterns which were expressed in related, but different, channels before the individual entered teaching as a profession?

This was the question which stimulated the present inquiry into the relationships between certain measurable teacher traits and various kinds of activities hypothesized to be related to the same *traits* which may dispose one to teaching) engaged in during childhood and adolescence by persons who later became teachers. The investigation was one of a number undertaken by the Teacher Characteristics Study, a project of the American Council on Education and the Grant Foundation in an effort to better understand the personal and social behaviors of teachers.

The sample employed consisted of 1640 elementary and secondary teachers drawn from the United States as a whole and constituting what is believed to be an approximately representative sample of teachers in the schools today. The characteristics which were studied in relation to childhood and adolescent activities were those, noted on page 59, for which scores were obtainable from the Teacher Characteristics Schedule.

Table I shows the mean scores (and standard deviations) on the Teacher Characteristic Schedule scales of teachers of the Survey Sample who profess to have participated in various activities during childhood and adolescence. Among these several activities noted, teachers who said they had "read to children" and "taken class for teacher" generally tended to score higher, though often the differences did not attain statistical significance, than others (such as teachers who said they had "taken care of children in own family" and "played school").

Of particular interest is the comparison of the scores of (a) those teachers who participated in *any of the activities named* with (b) teachers who participated in *none* of them.

Significant t ratios (.05 level) were obtained for comparisons of nonparticipation and participation for each of the activities with respect to understanding, friendly classroom behavior (X_{co}), responsible, businesslike

Dr. David Ryans is a frequent contributor to the CALIFORNIA JOURNAL OF EDUCATIONAL RESEARCH. *Dr. Ryans, Professor of Education at the University of California at Los Angeles, is a member of the California Advisory Council on Educational Research, and he has been associated with the Teacher Characteristics Study of the American Council on Education, of which this article is a part.*

TABLE I

Comparison of Teacher Characteristics Schedule Scores of Teachers (Survey Sample) Classified According to Professed Participation in Certain Kinds of Activities During Adolescence

Activities	*N**	X_{co}		Y_{co}		Z_{co}		R_{co}		RI_{co}		Q_{co}		B_{co}		I_{ci}		S_{ci}		V_{ci}	
		M	σ	*M*	σ	*M*	σ	*M*	σ	*M*	σ	*M*	σ	*M*	σ	*M*	σ	*M*	σ	*M*	σ
Child Care (family)	585	35.1	6.8	27.7	4.0	27.5	4.5	33.4	8.4	32.8	6.3	33.5	6.9	21.3	8.7	28.6	7.8	22.5	8.0	36.9	8.5
Child Care (non-family)	403	36.2	7.0	28.4	4.0	27.9	4.6	33.6	8.7	33.6	6.4	33.4	7.2	19.8	9.0	28.9	7.4	22.7	8.1	36.6	8.5
Played School	994	35.2	6.8	28.6	3.7	27.5	4.7	32.5	8.5	32.8	6.3	33.2	7.2	21.3	8.6	28.5	7.8	21.8	7.9	37.3	8.4
Read to Children	538	36.6	6.8	28.8	3.7	28.1	4.7	34.4	8.6	34.0	6.5	34.2	7.3	19.2	8.7	29.1	7.8	22.7	7.8	36.7	8.5
Took Class for Teacher	567	36.5	6.4	28.8	3.9	28.1	4.4	33.0	8.4	33.4	6.2	33.7	7.3	20.5	8.3	29.1	7.6	22.6	8.0	36.9	8.3
Participated in None of Above	244	32.5	6.7	24.4	4.0	26.7	4.5	29.2	8.3	30.9	6.3	31.9	6.6	22.9	8.7	28.4	7.8	23.1	8.3	37.7	8.5
Aggregate Survey Sample	1640	34.5	6.8	27.3	4.2	27.3	4.6	31.6	8.5	32.1	6.4	32.8	7.1	21.8	8.6	28.2	7.9	22.1	8.1	37.2	8.4

* Multiple response possible; a teacher may report more than one activity.

TEACHER CHARACTERISTICS STUDIED

X_{co}	Understanding, friendly *vs.* aloof, egocentric restricted to classroom behavior.
Y_{co}	Responsible, businesslike, systematic *vs.* evading, unplanned, slipshod classroom behavior.
Z_{co}	Stimulating, imaginative, surgent *vs.* dull, routine classroom behavior.
R_{co}	Favorable *vs.* unfavorable opinions of pupils.
$R1_{co}$	Favorable *vs.* unfavorable opinions of democratic classroom procedures.
Q_{co}	Favorable *vs.* unfavorable opinions of administrative and other school personnel.
B_{co}	Learning-centered ("traditional") *vs.* child-centered ("permissive") educational viewpoints.
I_{ci} or I_{co}	Superior verbal understanding (comprehension) *vs.* poor verbal understanding.
S_{ci} or S_{co}	Emotional stability (adjustment) *vs.* instability.
V_{ci} or V_{co}	Avoidance of excessive use of self-boosting and socially acceptable responses (validity of response) *vs.* excessive use of self-enhancing responses.

classroom behavior (Y_{co}), stimulating, imaginative classroom behavior (Z_{co}), favorable attitude toward pupils (R_{co}), favorable attitudes toward democratic classroom practices ($R1_{co}$), favorable attitudes toward administrative and other school personnel (Q_{co}) and permissive *vs.* traditional educational viewpoints (B_{co}). Teachers who had engaged in such activities scored higher on the classroom behavior and attitudes scales and indicated more permissive educational viewpoints than the non-participating group. Participation in the activities named during childhood and adolescence, it would seem, may offer significant clues to the present characteristics of teachers.

Whether such results arise from an antecedent-consequent relationship between participation in certain activities and tendency to manifest desirable teacher characteristics, or from the fact that high scoring on the Teacher Characteristic Schedule and earlier participation in the activities in question both are functions of some common personality variable, is not possible to determine from the cross-sectional type of taxonomic research here reported.

Ability and Achievement in A Selected High School Senior Seminar

CAROLYN GREENBERG

Evaluating the outcomes of special programs for superior students is one of the most neglected areas of research in this field. Superior students have been identified through scientific techniques, placed in rich educational environments, and motivated through challenging programs. Attempts to evaluate their learnings or the changes in their behavior result in little objective evidence. If the burden of proof were placed on the student instead of the research technician we might have more concrete evidence of desirable growth. As an example of this, the California Journal of Educational Research is publishing an article written by Carolyn Greenberg while she was a student in the San Francisco Unified School District Seminar of 1957.

This eight week seminar was held during the summer of 1957 at Polytechnic High School, the home of the Lux Electronics Laboratory. The Thirty-five participating students were selected from the high junior and low senior classes of San Francisco's seven public high schools on the basis of ability and scholarship. The four hour school day was divided into studies in the field of the humanities and studies in the field of science. Students were privileged to select a project in each area and work on it in groups or independently under the guidance of specially qualified teaching personnel. Institutions of higher learning in the area made their library and laboratory facilities available to the group. Students were also encouraged to interview specialists in the field of their investigations.

Carolyn, whose special interest was psychology, selected the field of testing as her seminar project. While there were limitations beyond her control, of which she was aware, she did not treat her investigation lightly. Her article may not hold up under the scrutiny of the pure researchers. It appears, however, to reverse the challenge, and raises the question of what should be offered to sixteen year olds who make such courageous beginnings. Carolyn is now a senior at San Francisco's Lowell High School. L.L.B.

Interpretation and Evaluation of Test Scores

I began my research first by reading material about general psychology, intelligence, and intelligence tests. Shortly after the course started, the group was given the Durost-Center Word Mastery Test. When I tabulated the results of this test, I became interested in their significance. I had learned from reading that a high correlation exists between vocabulary and intelligence. Basing my research on this fact, and using twenty-eight scores of our selective group, I compared the results of the Durost-Center Word Mastery Test with those of the American Council on Education Psychological Examination and the Tenth Grade Cooperative Achievement Examinations, both of which we took in the tenth grade. I also compared

the results of the American Council on Education Psychological Examination with those of the Tenth Grade Cooperative Achievement Examinations. By finding a correlation between different tests in the Tenth Grade Cooperative Achievement series, I was able to understand their value.

Test Summaries

The Durost-Center Word Mastery Test is one test of the Evaluation and Adjustment Series used for educational evaluation. The purposes are to measure the general vocabulary level of high school students and to measure the extent of learning by use of context. Part one consists of a one hundred word vocabulary test. Part two is the use of the same one hundred words in sentences. The two equivalent forms of the test contain words obtained from textbooks, magazines, and conversation. During the test standardization, items were chosen on the basis of difficulty, gain from part one to part two, gain in passing in higher grades, and the discrimination index. The reliability was measured by the split-half and the alternate-form coefficients. The test scores are interpreted through percentile norms and standard scores, which have been scaled separately for each grade based on the fourth and ninth month. There is also a use of context percentile measuring the score improvement by use of words in sentences. The correlation between intelligence and word mastery in the normative group was .78 to .85 with substantial variance. One shortcoming of the test is that students testing low in part one are too limited to increase their score in part two, while students testing high in part one have no ceiling for improvement in part two.[1]

The American Council on Education Psychological Examination is a test measuring aptitude of high school and college students. The first part is linguistic ability, including vocabulary knowledge, and verbal reasoning, which is influenced by reading speed. The second part is quantitative ability, including skill and speed in arithmetic problems, reasoning with numbers, and non-verbal reasoning. The test measures scholastic aptitude with reference to college curricula. The items were chosen by factor analysis and preliminary trial. The test is suitably difficult but it tends to reward hasty workers and is not suitable for non-academic prediction. It has not been definitely proven that the L score predicts ability in verbal subjects and that the Q score predicts ability in engineering and science. Each year national percentiles from the previous year are published with preliminary norms. The American Council on Education Psychological Examination is one of the most reliable all-purpose tests for college freshmen and superior high school students.[2]

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[1] *Durost-Center Word Mastery Test; Manual of Directions*, pp. 1-8.
[2] Lee J. Cronbach, *Essentials of Psychological Testing*, pp. 185-186.

The Tenth Grade Cooperative Achievement Examinations are a series of tests in four fields: English, Social Studies, Natural Science, and Mathematics. The purpose of the tests is to estimate the capacity of each individual student to undertake the academic work of the next level. This series may be used from the fourth grade level to the sophomore year in college, which makes it possible to measure continuous educational growth. The tests have sufficiently high content validity for estimating school-learning ability, but other academic abilities and attitudes must be considered. The reliabilities have been proven sufficient for recording and individual interpretation. The tests are of reasonable difficulty, providing some challenge to the superior and encouragement for the slow. The scoring is based on regional percentile norms which still require further research.[3]

The results of the statistical treatment are shown in Tables I and II. Table I describes the selected seniors in terms of central tendency and range of abilities on the tests administered. Table II shows the relationships between the various abilities tested within the group.

Conclusions

It becomes obvious by considering all of the test results, and their relationships, that an accurate analysis of the tests and test results cannot be made on a small selective group. Even a judgment of the value of such tests for superior students by using our group would be subject to error. The Durost-Center Word Mastery Test was taken by the entire group at the same time and under the same conditions. However, The American Council on Education Psychological Examination and The Tenth Grade Cooperative Achievement Examinations were taken by the students at different schools, at different times, and under varied conditions. Thus, the results of the three tests may not be compared with complete accuracy.

The percentile scores of the small selective group, as already seen, are definitely much higher and distributed differently than those of an average group. In a normal distribution of scores both the average, median, and mode figures would fall at the curve's peak. In this distribution the great number of higher scores causes the median and mode to fall together, usually at a peak which is high in the range of scores. The average is usually considerably less, because it is affected by a few lower scores. In the Durost-Center Word Mastery Test Average the standard deviation of the group is large. In the quantitative section, the American Council on Education Psychological Examination shows a large standard deviation which is accounted for by more low scores in this part of the test. The

[3] *Cooperative School and College Ability Tests: Examiners Manual,* pp. 3-21.

standard deviation of The Tenth Grade Cooperative Achievement Examinations is small and constant for all four tests.

The correlations in general for this group are significant. The lowest correlation for the tests with expected relationships is .51 between the

TABLE I

Ability of Group on Tests Administered—Central Tendency and Range

Test	*Standard Deviation*	*Mean*	*Median*	*Mode*
Durost-Center Word Mastery Test—Average part 1 and 2	22.3	87.71	98	98
American Council on Education Psychological Examination—Linguistic	8.9	92.29	95	95
American Council on Education Psychological Examination—Quantitative	14.6	84.82	90	95
American Council on Education Psychological Examination—Total	6.5	92.64	95	95
Tenth Grade Cooperative Achievement Examinations—English	11.5	91.52	99	99
Tenth Grade Cooperative Achievement Examinations—Social Studies	11.1	93.26	99	99
Tenth Grade Cooperative Achievement Examinations—Natural Science	11.1	94.39	99	99
Tenth Grade Cooperative Achievement Examinations—Mathematics	11.9	90.74	94	94, 99

Durost-Center Word Mastery Test Average and the Tenth Grade Cooperative Achievement Eamination in Mathematics. Since there is a great difference in the types of ability measured by these two tests, the correlation has some significance. The correlations of The Tenth Grade Cooperative Achievement Examination in English with the American Council on Education Psychological Examination-Linguistic and the Durost-Center Word Mastery Test Average are approximately the same (.66 and .68). This shows a relationship of all three tests which is proven by the correlations of .77

between the Durost-Center Word Mastery Test Average and The American Council on Education Psychological Examination—Linguistic. The highest correlation, .97, is between the American Council on Education Psychological Examination—Quantitative and The Tenth Grade Cooperative Achievement Examination in Mathematics. The score of the Natural Science section of The Tenth Grade Cooperative Achievement Examination seems to have more correlation with vocabulary than with mathematics. This may be due to the superior vocabulary scores and number of students working in the

TABLE II

Correlations

Tests	*Correlation*	*Interpretation*
Durost-Center Word Mastery Test Average and The American Council on Education Psychological Examination—Quantitative.	–.08	This is a small negative correlation. It confirms the great difference in types of knowledge measured by the two tests (vocabulary and mathematical ability), showing no relationship between the test scores.
American Council on Education Psychological Examination—Linguistic and The American Council on Education Psychological Examination—Quantitative.	–.05	This small negative correlation emphasizes the two distinct types of ability measured by the Linguistic and Quantitative sections of the examination. For individual interpretation the score of each part must be considered separately since there is no common relationship in measurement.
Durost-Center Word Mastery Test Average and The Tenth Grade Cooperative Achievement Examination in Mathematics.	.51	There is a positive correlation between the two tests which shows at least a small relationship. This can be useful when only very moderate accuracy is needed.
Tenth Grade Cooperative Achievement Examination in English and The Tenth Grade Cooperative Achievement Examination in Social Studies.	.53	The correlation between the two tests is positive and has some significance. Since the skills required in English and Social Studies are closely related the correlation between the tests may be larger when the distribution of scores is normal.
Tenth Grade Cooperative Achievement Examination in Natural Science and The Tenth Grade Cooperative Achievement Examination in Mathematics.	.60	A positive correlation exists which may be used with moderate accuracy. Natural Science and Mathematics to some extent require related abilities.
Durost-Center Word Mastery Test Average and The American Council on Education Psychological Examination—Total.	.65	There is a significant positive correlation between the vocabulary and psychological examinations. The scores may be influenced by a common factor.

(Continued on page 65)

TABLE II (continued)

Tests	*Correlation*	*Interpretation*
American Council on Education Psychological Examination—Linguistic and The Tenth Grade Cooperative Achievement Examination in English.	.66	There is an expected positive correlation between the tests which should exist if the two tests are reasonably valid. They both measure linguistic ability and have a definite relationship.
Durost-Center Word Mastery Test Average and The Tenth Grade Cooperative Achievement Examination in English.	.68	There is the expected positive correlation between both tests. Vocabulary has an influence in the total English score since they both represent linguistic ability. In normal distribution of scores in a large group there may be greater correlation between the tests.
Durost-Center Word Mastery Test Average and The American Council on Education Psychological Examination—Linguistic.	.77	This definite positive correlation proves the relationship between vocabulary and linguistic ability. Vocabulary influences the linguistic score to a great extent.
Durost-Center Word Mastery Test Average and The Tenth Grade Cooperative Achievement Examination in Social Studies.	.90	This very high correlation between social studies and vocabulary may be caused by the similar skew distribution of scores of this group in both tests. Vocabulary may affect the Social Studies score but they may both be influenced by a common factor, linguistic ability.
Durost-Center Word Mastery Test Average and The Tenth Grade Cooperative Achievement Examination in Natural Science.	.95	This very high correlation may be caused by the large amount of scientific knowledge and ability of the group compared with the large vocabulary of the students. Such a high correlation is almost never found in scores of a large group with normal distribution.
American Council on Education Psychological Examination—Quantitative and The Tenth Grade Cooperative Achievement Examination in Mathematics.	.97	There is almost perfect correlation between these two tests which is very unusual. This shows the similarity between the two types of ability being tested. Quantitative ability definitely affects mathematical achievement.

field of science in the Seminar group. The distribution of scores in Natural Science is similar to the distribution in Social Studies, both tests having the same mode, median, and standard deviation. This may prove valuable in discovering the similarity and relationship between the fields of science and the humanities.

The high correlations of the group scores in all of the tests show steady and continuous growth and achievement in all fields. Since the group supposedly has high intelligence, these tests seem to further substantiate the basis of selection and show a definite intercorrelation between scholastic aptitude, achievement in four tested fields, and general intelligence.

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The Validity of the School and College Ability Test for Prediction of College Achievement

PHYLLIS E. KENNEDY

The purpose of this study was to determine the efficiency of the School and College Ability Test (SCAT)[1] in predicting college success in terms of student grade point averages earned during the Fall, 1956, semester at Los Angeles State College, San Fernando Valley Campus. Individual colleges need to determine the effectiveness of their aptitude tests for predicting college success since it is difficult to achieve comparability in the evaluation of information furnished by records from previous schooling.

Background of the Study

Many studies dealing with the prediction of grades from use of aptitude tests have been done in the past. Two studies will be quoted to indicate the general findings and possible extent of predictability in this area. Lindquist (4) points out certain limitations in the use of scholastic aptitude and achievement tests. He states[2] that the highest potential predictive value is represented by a coefficient of around .75 for when the best achievement and aptitude tests are combined to predict grades, it is seldom possible to obtain validity coefficients of more than .70. The median correlation of tests such as the C.E.E.B.[3] Scholastic Aptitude Tests, using freshmen grades as the criterion, usually falls near .45. The operation of non-academic factors such as motivation, persistence, methods of studying, environmental factors, clearness of educational goals, and other personal characteristics frequently reduce the size of the obtained validity coefficients. Grading variations and differences among faculty also reduce the observed correlation.

[1] Educational Testing Service, *Cooperative School and College Ability Tests.*
[2] Lindquist, pages 90-92.
[3] College Entrance Examination Board.

Phyllis E. Kennedy is currently in charge of testing at the Los Angeles State College, San Fernando Valley Campus. Before 1956 she was a psychometrist at the Veterans Administration Guidance Center, Los Angeles State College. She received her Master of Science in Education degree from the University of Southern California in 1956.

Another study (2) gives a median correlation of .47 between a commonly used entrance examination (the ACE[4]) and first year grade averages for eleven colleges, and a median correlation of .57 between high school standing and first year grades of ten colleges. The study shows a multiple correlation of around .64 for predicting grades from using a composite of entrance examination score and high school rank.

Procedure

Composition of the sample. Five samples of Valley Campus students were selected for computing correlations between SCAT scores and grade point averages for the Fall semester of 1956. The SCAT test was administered in the early part of the Fall semester.

Two of these samples were designated "total group" samples and included juniors, seniors, and graduate students representing all majors. Students who had Fall semester SCAT records and who completed ten or more units at the end of the semester were used in one of these samples. The other sample consisted of all students with test records who completed fourteen or more units, the full time students. The number of cases in these two samples were 151 and 81, respectively. Withdrawals and incompletes in courses were not counted as units completed nor as grade points attempted.

Three other samples were of students with majors in various divisions. These samples, composed of students who completed eight or more units, were as follows: business majors (N=29), elementary education majors (N=80), and social science majors (N=27). Samples were small even though all available records were used.

Computation of grade point averages. Weights for determining grade point averages were based on a five point scale: four points for each unit of "A," three points for each unit of "B," two points for "C," one point for "D," and zero for "F." Classes receiving credit instead of a final grade were omitted in computing unit load and grade point averages. While grades are often not so reliable a measure of achievement as could be desired because of variations in courses, instruction, and ability of students from class to class, grade point averages are almost the only quantitative measure available for evaluating students' academic success.

Method. Grade point averages of Fall semester grades were computed for all students in the five samples. Scatter diagrams were made between the grade point averages and Verbal, Quantitative, and Total SCAT scaled scores. Means, standard deviations, and Pearson coefficients of correlation were computed for each of the samples. A standard error of a Pearson correlation coefficient was computed for each value obtained. The purpose of using scatter diagrams was to inspect the data to obtain the clearest

[4] American Council on Education.

picture possible of the nature of the distribution, and to check on the underlying assumption of linearity for the Pearson correlations.

Results

The Pearson correlations between SCAT Verbal, Quantitative, and Total scores and grade point averages for the Fall semester, 1956, are reported in Table I.

TABLE I

Pearson Correlation Coefficients and Standard Errors Between the School and College Ability Test Verbal, Quantitative, and Total Scores and Grade Point Averages for the Fall, 1956, Semester for Various Samples of L.A.S.C. Valley Campus Students

Sample	*Number*	*SCAT Verbal* r	S.E.	*SCAT Quantitative* r	S.E.	*SCAT Total* r	S.E.
"Total group" full time day, 14 or more units	81	.643**	.07	.286**	.10	.632**	.07
"Total group" 10 or more units	151	.550**	.06	.262**	.08	.520**	.06
Business Div. Majors	29	.627**	.11	.742**	.09	.788**	.07
Elementary Education Majors	80	.575**	.07	.258*	.10	.538**	.08
Social Science Majors	27	.640**	.12	.278	.18	.645**	.11

* Significant at the 5 per cent level.
** Significant at the 1 per cent level.

All correlations obtained in this study between grade averages and Verbal and Total scores for all samples were significant well beyond the 1 per cent level of confidence. The correlations between grade averages and SCAT Quantitative scores were much lower but were significant at the 1 per cent level except for the sample of elementary education majors (significant at the 5 per cent level), and for the sample of social science majors (not significant).

Of particular interest and use are the correlations or validity coefficients obtained from the "total group" sample of students who completed 14 or more units, designated full time students. Correlations of .64 for the Verbal part (standard error =.07); denoting a level of significance well beyond the 1 per cent level), and .63 (standard error = .07) for the Total score indicate substantial relationships and may be used for purposes of general group prediction in counseling. The Quantitative part score correlation was not

sufficiently high to have practical value for the prediction of grades in terms of the total combined group of students at the campus. The Quantitative score, however, does predict grade averages in the sample of business majors.

The data from the scatter diagram is presented in Table II.

TABLE II

Distributions of SCAT Total Scaled Scores Earned by Full Time L.A.S.C. Students Receiving Various Semester Grade Averages

SCAT Total Score	*Grade Averages*				
	F 0-.9	*D* 1.0-1.9	*C* 2.0-2.9	*B* 3.0-3.9	*A* 4.0
335-339					1
330-334				1	
325-329				3	2
320-324				4	2
315-319			4	5	
310-314		1	5	2	
305-309		1	9	7	
300-304		1	6	5	
295-299		1	9	1	
290-294			5		
285-289		1	4		
280-284		1			
Sums:	0	6	42	28	5

The table gives the distributions of scaled scores on SCAT Total score made by full time students earning various grade averages. Thirteen students from the sample earned a SCAT Total score of 320 or above. Of these, 38 per cent (5 students) received a straight A average, while the remainder received an average of B or above. All students with a score of 315 or above earned a B average or better. No students scoring below 295 on the SCAT reached a B average. Of the students scoring below 290, one-third (2 out of 6 students) earned grade averagees below C; the remainder earned C averages.

Coefficients for the "total group" sample of students who completed 10 or more units were somewhat lower than those for full time students, probably because the presence of fewer restrictions on the number of units taken during that semester would afford somewhat less control of other factors. However, the correlations were still substantial: Verbal score with grades was .55; Quantitative score with grades was .26; and Total score with grades was .52. All were significant beyond the 1 per cent level. The Verbal score again appears to predict achievement for students of State

College more successfully than the Total score which is a composite of both verbal and mathematics skills.

Since the division samples were generally small and since any statistics computed on small samples are less reliable, correlations obtained for new samples might vary considerably. The relationship between grade averages and test scores in the sample of business majors was the highest of those obtained in this study. Coefficients of .63 for Verbal, .74 for Quantitative, and .79 for Total score were obtained. Both verbal and mathematics skills contributed to the achievement of business majors.

Substantial correlations were found for the two other groups of students. The relationship between ability and grade averages of elementary education students was represented by correlations of .58 for the Verbal score, .26 for the Quantitative score, and .54 for the Total score. Correlations of scores, .64 for Verbal, .28 for Quantitative and .64 for Total, were obtained between the ability test and grade point averages of social science majors.

Summary

On the basis of the results, particularly those obtained for separate divisions, SCAT Verbal, Quantitative, and Total scores were significantly related to the successful attainment of grades. In the Business Division, the separate Verbal and Quantitative scores would be expected to aid considerably in individual counseling.

A similar statement could be made for the utilization of Verbal scores in counseling elementary education majors. The Quantitative score did not appear to be so important for prediction in the Education and Social Science Divisions as for students in the Business Division. Even though the results would appear promising, it should be remembered that the present studies were based on relatively small numbers, and changes in the results of future studies might be expected. However, the size of the coefficients obtained was encouraging.

The effectiveness of the SCAT test for individual prediction, use in counseling and advisement, and for setting up of critical scores may well be more conclusively demonstrated in future studies. These studies which will be divisional in nature will be attempted periodically.

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Mental Ability Scores for Freshmen In a California State College

WALTER T. PLANT

In the December, 1956, issue of *California Schools* there was an article by Semans, Holy, and Dunigan (1) which surveyed graduates of public high schools in certain California counties in attempting to establish the need for additional centers of the three kinds of higher education in this state. One section of the report sought an answer to the following problem: How do the admission requirements of each institution relate to the academic ability of those who qualify for admission?

In discussing the Intelligence Quotients of those California high school graduates who could meet the university, state college, and junior college entrance requirements, Semans et al. state:

> **In terms of the modal point, that [IQ] of the University falls within the above 120 group, the state college in the 100-109 group, and for those who meet neither, in the 100-109 and the 90-99 groups. (1: 424)**

Anticipating that there may be intellectual differences between those who could attend a publicly supported institution of higher education and those who do attend, Semans et al. indicate that:

> **Finally, it should be emphasized that Table 3 shows only the distribution of those who *qualify* for admission to the University and the state colleges. Actually, the distribution of mental ability of those who *do enroll* may represent an entirely different pattern. (1: 425)**

At San Jose State College we have accumulated a considerable pool of mental ability data for college freshmen, and as anticipated in the Semans et al. study, there is an entirely different distribution of mental ability scores for those who do attend a California state college compared with the ability scores of those who could attend such an institution. Table I contains a comparison of the Semans, Holy and Dunigan mental ability data and the San Jose State College freshman mental ability data grouped into the intervals found in the Semans et al. report.

The mental ability data in Table I are for two groups of students who were freshmen at the time of testing. The IQ's reported are full-scale IQ's. The test used with 732 students was the *Wechsler-Bellevue Intelligence Scale, Form I* (2), and the test used with 361 students was the *Wechsler*

Walter Thomas Plant is Assistant Professor, Department of Psychology at San Jose State College, a position he has held for the last nine years. He obtained his doctorate from Stanford University in 1956.

Adult Intelligence Scale, the new form of the adult Wechsler (3). The data for the two groups are reported in separate columns in Table I, but also grouped as a total because approximately one-half of the Wechsler Adult Intelligence Scale items are from the Wechsler-Bellevue, Form I. Although pooling scores in this fashion is questionable until the two tests are demonstrated to be equivalent, the probability is good that less error is induced by such pooling with these two scales than was the case in the Semans et al. study in which the results of thirty-five different mental ability tests were pooled.

TABLE I

IQ Distributions for June, 1955, High School Graduates Who Met the Entrance Requirements of the California States Colleges (After Semans, et al.), and for 1,093 San Jose State College Freshmen

Report of H.S. graduates according to Semans, et al.		*Wechsler-Bellevue Distribution for S.J.S.C. freshmen tested*			*Per cent of S.J.S.C. freshmen at IQ intervals of Semans, et al.*
IQ	*Per cent who could qualify*	*Form I*	*Adult Scale*	*Total*	
Above 120	11.0	268	78	346	31.7
115-120	12.7	182	111	293	26.8
110-114	12.7	122	89	211	19.3
100-109	34.2	126	72	198	18.1
90-99	19.0	33	11	44	4.0
Below 90	6.7	1	0	1	.1
Total	100.0	732	361	1,093	100.0

The "Wechsler sample" appears to be representative of the freshman population of San Jose State College in terms of 1949 *American Council on Education Psychological Examinations* (A.C.E.) raw scores and in terms of scores on *The Cooperative English Tests C2: Reading Comprehension* test. This "Wechsler sample" has a mean 1949 A.C.E. total raw score less than three points below the national 1949 four-year college norm group mean, and which is less than one point above the 1949 national all-college norm group mean.

If one compares the percentage of persons in the various IQ intervals in Table I, it becomes quite apparent that the mental ability differences reported there are extreme. These results call for a reformulation of the statements by Semans et al. as to the possible differences in mental ability between those who could attend and those who do attend a California state college. It is clear that the distribution of mental ability of those who *do qualify* and *do enroll* in a California state college is decidedly different from the distribution of mental ability of those who *qualify* for admission.

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Home Economics Majors Compared with Other Majors in Education on A. C. E. Test

VIVIENNE L. WEBBER AND DOROTHY M. LEAHY

The School of Education at the University of California instituted a program of teacher selection in 1952. It was predicated upon the assumption that better teachers would mean a higher quality of instruction in the classroom. The center concerned with the process of selection became known as the Selection and Counseling Service of the School of Education. This service employs a number of devices in the process of selection among which is the American Council on Education Psychological Examination for College Freshmen.

Since the program of teacher selection has been established, the Department of Home Economics has been interested in knowing how its majors compared with those of other departments in the School of Education. Thus, this study was undertaken in the College of Applied Arts at UCLA to determine whether any significant differences in scholastic ability existed between women home economics teacher education majors and women interested in teacher education in other fields. The College of Applied Arts encompasses departments of specialized nature, with curricula of technical and professional character, namely the departments of Home Economics, Art, Business Education, Music, Physical Education, and Theater Arts, plus certain curricula in Apparel Design, Apparel Merchandising, and Dance. Only the first five departments were included in this study because they have as one of their major responsibilities the preparation of teachers.

Dorothy M. Leahy is currently Professor of Home Economics Education, University of California at Los Angeles, where she has been since 1948. Prior to the present position she was a secondary school teacher in Minneapolis; Assistant Professor, University of Connecticut; and Professor of Home Economics Education, Florida State University, Tallahassee, Florida. Dr. Leahy is the Home Economics Editor for Encyclopaedia Britannica, the author of a number of articles in the Journal of Home Economics, and co-author of "You and Your Family" (Heath). She received her doctorate in 1943 from Columbia University.

Vivienne Larsen Webber was a teaching assistant at the University of California at Los Angeles prior to joining her husband, Captain Milo Webber, in Germany. She received her master of science degree in 1957 from the University of California at Los Angeles. This article is based on the research accomplished for this degree.

The study was concerned with the performance on the American Council on Education Psychological Examination for College Freshmen[1] of home economics and non-home economics majors from the departments in the College of Applied Arts who had applied for admission to the School of Education for student teaching. This examination purports to measure scholastic aptitude essential for successful achievement in college work and is composed of two parts, linguistic and quantitative tests. The two test scores together yield a gross score. The linguistic score has been thought to have more application to achievement in liberal arts curricula with its emphasis on verbal skills, while the quantitative score has been thought to give some indication of success in technical or scientific fields.

Home economics is a broad field integrating subject matter from several disciplines both scientific and technical in nature, such as chemistry, nutrition, and clothing construction. It also demands skill in language arts, such as in reading for knowledge and comprehension, theme writing, and reporting both oral and written. Thus, the A.C.E. would appear to be an examination that might reveal some predictive factors regarding the potentialities of a student at the college level to achieve satisfactorily in home economics and teacher education.

The study was predicated upon the assumption that there are no significant differences between women home economics teacher education majors and teacher education majors in art, business education, music, and physical education in the College of Applied Arts as measured by the A.C.E. Examination.

In order to limit variables and thus make comparisons more valuable, a homogeneous sample was sought. The sample population for the study was composed only of women teacher education majors from the ages of seventeen through twenty-six from the College of Applied Arts. The research population was considered to be a representative sample since it was made up of all women teacher education students who had taken the Examination from Fall, 1953 to Fall, 1955 in the College of Applied Arts. The data recorded for each subject included: number assigned by the Selection and Counseling Office, age, class in school (freshman, sophomore, junior, senior, or graduate), candidate for a special or general secondary credential, and test results on the quantitative, linguistic, and gross scores on the A.C.E. The total sample population consisted of 231 women teacher education majors: 53 in art, 41 in business education, 32 in music, 58 in physical education, and the 47 in home economics.

An analysis of the data showed that most of the students in each department were juniors, while the second largest concentration was at the senior level. Sixty-eight per cent (32 women) in the home economics sample were juniors, while 14.9 per cent (7 women) were tested at the senior level. The

[1] Hereafter referred to as the A.C.E.

preponderance of juniors may be due to these facts: (1) the School of Education at UCLA does not formally admit students until they have reached junior status; (2) many students do not decide upon a major until they reach upper division or junior standing; (3) many students enter UCLA from junior colleges at the junior year.

Most home economics women desired to obtain the special secondary rather than a general secondary credential. That the majority were seeking the special secondary credential was probably due to three factors: (1) the individual will be required to teach only her major subject field on the job; (2) it takes less time to receive a special secondary, and (3) a special secondary is required to teach in a federally reimbursed program. Which type of credential the students finally received was unknown for the Selection and Counseling Office had no record in this regard.

Table I shows medians or the fiftieth percentile for all departments in relation to the percentile norms for the UCLA School of Education and the national median. On the linguistic test, home economics obtained a median

TABLE I

Comparison of Departmental Scores on the A. C. E. with the School of Education Norms and National Norms

A.C.E. Examination	*Students' Major Department*	*Median Scores*	*School of Education Percentile Norms*[a]	*National Median Norms*[b]
Linguistic	Home Economics	71	33	
	Art	75	47	
	Business Education	74.5	44	
	Music	69	30	
	Physical Education	65	20	
	School of Education	76	50	63
Quantitative	Home Economics	50	62	
	Art	45	40	
	Business Education	45	40	
	Music	45	40	
	Physical Education	45	40	
	School of Education	47	50	43
Gross	Home Economics	121	44	
	Art	120	43	
	Business Education	119.5	43	
	Music	119	43	
	Physical Education	112	28	
	School of Education	124	50	108

[a] School of Education A. C. E. percentile norms determined from 1050 Education students in 1952.

[b] National median norms based on scores from approximately 25,000 freshmen women from 293 colleges, 1947 edition of the A. C. E.

of 71 and placed in the middle of the medians for the departments in the College of Applied Arts. However, when compared with the norms established by the School of Education, they were at the thirty-third percentile. On the quantitative test home economics was higher than any other department in the College of Applied Arts and was at the sixty-second percentile for the School of Education. On the gross score, home economics received the highest median for any department in the College of Applied Arts, but on the School of Education norms attained only the forty-fourth percentile. The national median was lower than any department median secured in this study, but one should be reminded that the national median was based only on freshman scores, while this study dealt primarily with upper classmen, juniors and seniors.

Table II gives the distribution of measures on the A.C.E. as to range in scores, mean, and standard deviation. It will be noted that home economics obtained a mean of 72.34 with a standard deviation of 12.74 on the linguistic test. Again, this mean was in the middle for the departments

TABLE II

Distribution of Measures on the American Council on Education Phychological Examination*

A.C.E. Test	*Students' Major Department*	*Range of Scores*		*Mean Scores*	*Standard Deviation*
		Low	*High*		
Linguistic	**Home Economics**	47	101	72.34	12.74
	Art	30	107	75.15	15.68
	Business Education	46	95	73.88	12.50
	Music	37	93	66.81	13.51
	Physical Education	40	105	68.26	12.54
Quantitative	**Home Economics**	29	68	48.63	7.79
	Art	18	61	44.68	10.09
	Business Education	25	65	46.76	9.15
	Music	23	58	45.03	8.60
	Physical Education	17	61	43.69	8.94
Gross	**Home Economics**	86	160	121.02	18.48
	Art	48	158	119.79	20.51
	Business Education	75	158	120.83	19.79
	Music	60	138	112.84	18.58
	Physical Education	59	157	111.64	20.86

* Total number of students was 231, divided as follows: Home Economics 47, Art 53, Business Education 41, Music 32, Physical Education 58.

in the College of Applied Arts. On the quantitative and gross tests home economics received the highest means, 48.68 and 121.62 respectively.

To determine whether any significant differences existed between departments, an analysis of variance was performed. An analysis of variance

determines whether the differences between groups is that much greater than the variability within groups as to warrant the assertion that the groups were drawn from different populations. If the F ratio, or ratio of variance, was significant at the five per cent level of confidence, further analyses were to be made to determine where the differences existed. Upon computing the F ratio, significant differences were found at the five per cent level on the linguistic and gross scores indicating that some difference existed between departments. Thus the"t" scores were computed for both of these tests.

Table III shows the results of the "t" test on the linguistic test. This "t" test was used to determine whether the differences between the departmental means were due to chance or were the result of differences in sample populations. Again, the five per cent level of confidence was accepted

TABLE III

The Test of Significance for Mean Difference Between Departments as Measured by the Linguistic Test

Departments Compared	$M_1 - M_2$	σ *diff*	*t*
Home Economics with—			
Art	2.805	2.875	0.978
Business Education	1.5376	2.728	0.564
Music	5.5284	3.069	1.801
Physical Education	3.0818	2.482	1.242
Art with—			
Business Education	1.2729	2.938	0.433
Music	8.3389	3.254	2.563*
Physical Education	5.8921	2.712	2.173*
Business Education with—			
Music	7.0660	3.128	2.259*
Physical Education	4.6194	2.555	1.808
Music with—			
Physical Education	2.4466	2.914	0.840

* A "t" value of 2.042 is significant at the five per cent level . At the one per cent level, a "t" ratio would be 2.750.

as the basis of significance. On the linguistic test, no significant differences for home economics were noted. However, the scores approached significance in the case of music and physical education, but not with sufficient magnitude to expect future samples to differ from each other. The results of this test showed significant differences to exist between the department of art in relation to music, and art in relation to physical education. Likewise, there was a significant difference between business education and music. In reality, the data tend to indicate that the departments may be

more similar than different as measured by the linguistic test.

Table IV shows the results of the "t" test on the gross scores. Home economics was significantly higher than physical education at the five per cent level. This may be due to the fact that home economics obtained

TABLE IV

The Test of Significance for Mean Difference Between Departments as Measured by the Gross Test

Departments Compared	$M_1 - M_2$	σ *diff*	*t*
Home Economics with—			
Art	1.229	3.94	0.312
Business Education	0.192	4.50	0.0429
Music	8.177	4.31	1.8972
Physical Education	9.383	3.88	2.4183*
Art with—			
Business Education	1.037	4.23	0.245
Music	7.985	4.38	1.823
Physical Education	8.154	3.96	2.0591*
Business Education with—			
Music	7.985	4.58	1.744
Physical Education	9.191	4.17	2.204*
Music with—			
Physical Education	1.206	4.33	0.278

* A "t" value of 2.042 is significant at the five per cent level. At the one per cent level, a "t" ratio would be 2.750.

the highest score of any department on the quantitative test and ranked relatively high on the linguistic test, though neither test was significant by itself, while physical education received the lowest score on both tests. While the differences between either of the two tests considered independently of each other were not significant, the sum of the differences was great enough to result in a significant "t" ratio. Therefore, it may be said that in ninety-five cases out of a hundred, one could expect home economics teacher education majors to obtain higher scores on the A.C.E. than majors in physical education.

The differences which did exist among all the groups were few in comparison to the total number that might have occurred and they tended to be in the same direction. Students in home economics, art, and business education were significantly higher in their performance on the A.C.E. than were students in physical education.

The results of this study tend to indicate that majors in home economics teacher education at the University of California, Los Angeles, were significantly better than majors in physical education and compared favorably

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Attitudes of High School and Other Teachers Toward Children and Current Educational Methodology

HENRY CLAY LINDGREN AND GLADYS MAY PATTON

The purpose of this study has been that of testing the hypotheses that high school teachers are inclined to be less favorably disposed toward children, and toward current educational theory and practice, than teachers in the lower grades and that male teachers are likewise less favorably disposed than female teachers.

The instrument used in this study was a 50-item "opinionnaire" consisting of statements to which there was a choice of three responses: "Agree," "Undecided," and "Disagree." Half of the items were drawn directly from an attitudinal questionnaire used in a study by Ida B. Kelley (1).

The questionnaire was filled out anonymously by students in 14 in-service teacher education courses offered by San Francisco State College. A population was thus accumulated that consisted of 216 teachers: 63 male and 98 female elementary and junior high teachers, and 45 male and 10 female high school teachers. The questionnaires were scored by the use of a key based on the "disagree" responses to Kelley's items and the "agree" responses to the items developed by the senior author. The corrected, split-half reliability of the questionnaire scored in this way is .82. The results, as reported in Table I, indicate that the two hypotheses are supported at slightly better than the .05 level of confidence.

The items on the opinionnaire were examined in order to determine whether they discriminated between high school and non-high school teachers. Items that showed the sharpest degree of discrimination are

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Henry Clay Lindgren, Professor of Psychology, San Francisco State College since 1947, is the author of "Mental Health in Education" (Holt) and "Educational Psychology in the Classroom" (Wiley). Dr. Lindgren has previously taught in the secondary schools of Hawaii and California and worked in rehabilitation work at the Naval Hospital at Mare Island and with the Veterans Administration. He obtained his doctorate from Stanford University in 1942.

Gladys May Patton received an A.B. from Whittier College, and at the time of the research reported here was a graduate student at San Francisco State College. She is an elementary teacher, but not teaching at the present time.

reported in Table II (page 82). Only one item, No. 37, discriminated in favor of high school teachers. The items were also examined to determine how they discriminated between men and women teachers. Items that showed the sharpest discrimination on this score are reported in Table III (page 83).

More than half of the teachers agreed with the key on every item, with the exception of five items, which are presented in Table IV (page 84). Table IV also contains eight items on which 90 per cent or more of the teachers agreed with the key.

TABLE I

Differences in Teachers' Attitudes Toward Children

Group	*Number*	*Mean*	*SD*	*Diff.*	*CR**
High School Teachers	55	33.56	7.83	2.56	2.03
Non-High School Teachers	161	36.12	6.13		
Male Teachers	108	35.35	7.17	192	2.11
Female Teachers	108	37.27	6.16		
Total Group	216	36.33	6.71		

* The critical ratio for the .05 level of confidence is 1.96.

Discussion

Although the hypotheses that gave rise to this study receive some support from the findings of this study, the differences between the two sets of groups are not very large. There are a number of factors that may be involved here, some of which serve to maximize the difference between the groups and some of which serve to minimize them.

The difference between the high school and the non-high school teacher groups might be accounted for, in part, by differences between the interests of the two. The Strong Vocational Interest Test for Women, for example, shows rather pronounced differences between women elementary and women high school teachers. The interests of the former, for example, tend to be much more closely related to the "housewife" scale than do those of the latter (2), and hence may be more indicative of a "motherly" type of person. The personalities of male elementary and male high school teachers might also be differentiated, but the corroborating evidence is lacking.

It is a common observation that high school teachers tend to be more concerned with subject matter and correspondingly less interested in the emotional life of children, whereas the reverse appears to be true of elemen-

tary school teachers. This idea appears to receive some support in the data reported in Table II.

TABLE II

Items Discriminating Between High School and Non-High School Teachers

Item No.	*Opinionnaire Statement*	*Level of Confidence**	
		Agree	*Disagree*
4	How a student feels about what he learns is as important as what he learns.	.001	
9	The classroom experiences that are the most helpful to boys and girls are the ones wherein they can express themselves creatively.	.02	
14	It is more important for students to learn to work together cooperatively than it is for them to learn how to compete.	.01	
15	Some pupils are just naturally stubborn.		.02
17	It is better for a girl to be shy and timid than "boy crazy."		.04
19	The first signs of delinquency in a pupil should be received by tightening of discipline and more restrictions.		.01
31	A teacher should lower grades for misconduct in class.		.01
37	Boys and girls can learn proper discipline only if they are given sufficient freedom.**	.001	
41	A great deal of problem behavior results from fear and guilt.	.08	
44	Most pupils need some of the natural meanness taken out of them.		.001

* Level of confidence and "correct" response according to key.
** Item discriminating in favor of high school teachers.

In the light of the above, perhaps it is surprising that the differences in scores are not larger than they are. On the other hand, it may be that the differences between the attitudes of high school and non-high school teachers are actually not very large. There is certainly a higher variation in the high school group, as indicated by the standard deviations in Table I, and more than a third of high school teachers have higher scores than half the non-high school group. However, it is possible that this study covered a rather select segment of the high school teaching population, namely, only those who were motivated to take in-service work in education and psychology. Perhaps if the opinionnaire were given to a more randomly selected population, the differences in scores would be more marked.

The items that discriminate between the high school and non-high school groups appear to indicate that the former are more concerned about subject matter, restriction, control, competition, and punishment. The dichotomy between the two groups is, however, somewhat blurred by

Item 37, which indicates that the high school group is much more aware of the importance of freedom as a basis for learning good discipline.

The differences between male and female teachers are not especially surprising in view of the different cultural expectations that apply to the members of each sex and shape their attitudes from infancy on. It is difficult to draw hypotheses from the kinds of items that discriminate between

TABLE III

Items Discriminating Between Men and Women Teachers

Item No.		*Level of Confidence**	
		Agree	*Disagree*
16	Students should be permitted to disagree with the teacher.	.01	
17	It is better for a girl to be shy and timid than "boy crazy."		.001
26	All questions a student asks should be recognized and considered.	.04	
29	A student who will not work should be helped in every way possible.	.05	
38	If a teacher keeps school conditions exactly the same and gives all pupils an equal opportunity to respond, he has done all he can do.		.001
41	A great deal of problem behavior results from fear and guilt.	.001	
45	It is more important for boys and girls to be liked and accepted by their friends than it is for them to get along with their teachers.**	.001	
49	Since a person memorizes best during childhood, that period should be regarded as a time to store up facts for later use.**		.01

* Level of confidence and "correct" response according to key.
** Items discriminating in favor of men teachers.

male and female teachers except, possibly, that the female group was inclined to favor items that are concerned more with the emotional aspects of the relationship between children and adults, whereas the two items favored by the male group tended to be more "intellectual" in nature.

The question naturally arises as to whether the differences between the high school and non-high school groups might be accounted for by the higher preponderance of male teachers in the former group. Although the high school group consisted of 45 men and 10 women, there was an insignificant difference between the male and female means.

The items on which teachers were in most disagreement with the key should give administrators and educational psychologists food for thought. The disagreement with Item 21 raises the question of whether teachers actually have very much awareness of the psychodynamics of problem

behavior. The response to Item 22 indicates that "faculty psychology" may still have a considerable following among teachers, in spite of the negative experimental evidence produced by Thorndike and others a generation ago. Item 30 evoked almost complete rejection. Regardless of the psychological and practical merits of automatic promotion, it apparently finds little

TABLE IV

Items with Which Teachers Showed the Most and the Least Agreement

Item No.	*Opinionnaire Statement*	*Per Cent in Agreement with the Key*
	Least Agreement with Key	
21	Most boys and girls who present extreme cases of "problem behavior" are doing the best they can to get along with other people. (Agree)	.25
22	An activity to be educationally valuable should train reasoning and memory in general. (Disagree)	.37
24	Being grouped according to ability damages the self-confidence of many boys and girls. (Agree)	.30
30	Boys and girls in the elementary school should be promoted regardless of whether they have completed the work for their grade or not. (Agree)	.12
32	A teacher should permit a great deal of latitude in the way he permits boys and girls to address him. (Agree)	.16
	Most Agreement with Key	
5	The way to handle a pupil who tells lies is to threaten to punish him. (Disagree)	.92
6	The high school pupil who is not interested in having dates should be commended. (Disagree)	.90
11	The child who bites his nails should be shamed. (Disagree)	.95
18	Boys and girls should learn that most of life's problems have several possible solutions and not just one "correct" one. (Agree)	.93
35	A teacher should accept the deficiencies and shortcomings of a student, as well as his good points. (Agree)	.95
43	It is better for boys and girls to talk about the things that bother them than try to forget them. (Agree)	.96
48	When a teacher is told something in confidence by a child he should keep the matter just as confidential as though it were entrusted to him by an adult. (Agree)	.90
50	Students should play a very active part in formulating the rules for the classroom and the school. (Agree)	.91

acceptance among teachers generally. Perhaps there are those who feel that the children's manner of addressing their teacher is a minor matter, but the response to Item 32 indicates otherwise. Apparently it is of major symbolic importance in the relationship between a teacher and his class.

Summary

A 50-item questionnaire dealing with teacher-child relationships and based in part on a previous study of effective and ineffective teachers was administered to 216 elementary and secendary teachers and filled out by them anonymously. When the questionnaire was scored with a key based on favorable attitudes toward children and acceptance of current educational theory and practice, non-high school teachers scored higher than high school teachers, and women scored higher than men. Although the differences were not large, they were significant at the .05 level of confidence. Items in the questionnaire discriminating between high school and non-high school teachers and between male and female teachers were analyzed and hypotheses were suggested to account for the differences. Most of the teachers reported themselves in agreement with the key on most of the items. The five items that evoked the most disagreement on the part of the majority of these teachers may indicate the existence of "areas of resistance" to research findings and to current theory in educational psychology.

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Home Economics Majors . . .

(Continued from page 79)

with other teacher education majors from the College of Applied Arts in their performance on the A.C.E. More specifically, they ranked highest on the quantitative test, highest on the total test, and in the middle for the College of Applied Arts on the linguistic test.

Some significant differences were found between departments but they were few in comparison to the number of differences that might have existed. Because home economics differed significantly with only one other department, physical education, the evidence tends to confirm the assumption that there are no significant differences between women home economics teacher education majors and teacher education majors in art, business education, music, and physical education in the College of Applied Arts at UCLA as measured by the A.C.E. Examination for College Freshmen. In other words, it may be said that the departments were, in general, more similar than different as determined by this sample and as measured by the A.C.E.

One Hundred Eighty Cases: A Follow-Up by A Rural School Psychologist

VERDUN TRIONE

Of the various problems met by a school psychologist in a rural area, the most difficult is his opportunity to evaluate the outcomes of individual case study service, for often a psychologist may not have the opportunity to do follow-up, nor will his administrator consider this a significant part of his duties.

At the time the writer entered the present agency in 1955, he structured and gained approval for the necessity of follow-up with the administrator. These data, then, illustrate the importance of evaluation which, in turn, has educational, administrative, and psychological significance. The data also demonstrate the need for a psychologist to effect changes in his methodology and practice so that he renders more efficient services in the territory for which he is responsible.

Scope of the problem. Two factors are pertinent to the problem: One is that Mendocino County is rural, although the term "rural" is used advisedly. Still, it is the twelfth largest county in the state of California, with a population of 52,000 people. There are approximately 11,000 children enrolled (kindergarten through twelfth grade) in 24 elementary districts and 11 high schools. The industry is basically farm and timber with only 5 per cent of the county actually under cultivation or in town sites. The other significant factor is revealed in a recent study by the California State Department of Education, which indicated that 45 per cent of the elementary and 33 per cent of the secondary teaching personnel in this county were found to be on provisional credentials.[1] Teachers with

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Verdun Trione has been for the last two and a half years Psychological Consultant to the Superintendent of Schools, Mendocino County, Ukiah, California. Mr. Trione has previously taught in Chicago and worked as a consultant and clinical psychologist in Illinois and California. He has taken graduate work at Illinois Institute of Technology, Northwestern University, received his Master of Arts degree at De Paul University. and is currently enrolled on a doctorate program at the University of California at Berkeley.

provisional credentials are presumed to be not as fully trained as the holder of a regular credential and this, in itself, constituted a problem for in-service education which the psychologist had to keep in mind when he sent reports to districts where a study had been made. Since the writer was the only psychologist available for the county schools in this area and since the services were just being introduced, follow-up was not only important, but follow-up as a means of research needed support.[2]

Examinations of the 180 children were completed between September 15, 1955 and May 1, 1956 with the follow-up months being in January and May, 1956. At least thirty days elapsed after the individual study was completed before the psychologist made contact with the administrator or the teacher. The psychologist's reports were delivered through the local administrator, since it was the administrator's responsibility to confer with the teacher and/or the consultant in order to provide for appropriate action. The psychologist's reports contained specific recommendations, even to the point of indicating specific materials, methods, or other action to be utilized. Such specificity was demanded due to the paucity of resources in the rural county, the in-service training problem, and the lack of referral opportunities to other agencies. Nevertheless, the basic problem here was to determine how well psychological services were used in a rural area.

Data were procured in two ways: (1) by use of the Key-Sort method; (2) personal follow-up by the psychologist.

Sources of referrals. The total number of referral cases was 180, of which 116 (64.5 per cent) were male and 64 (35.5 per cent) were female Of this total, the school districts referred the largest number, 126 or 70 per cent, but it is important, also, to note the other origins. Parents seeking assistance on a child's problems constituted 20 cases (11 per cent); while the Mendocino County Probation Department sent 16 children (9 per cent). Other agencies included 4 (2 per cent) from the Crippled Children Services, an agency handling most of the county medical problems for children, 5 (3 per cent)) from a volunteer Family Counseling Center, and the remaining 9 (5 per cent) from a variety of individuals or agencies such as a family health advisor, the Welfare Department, or a church.

Types of referral problems (as defined by the agency). The most frequently referred child was called a "welfare problem." Such designation was purely an arbitrary classification, but it can be justified by noting that the welfare of the child is the paramount consideration. This classification contained the greatest number, 78 or 43 per cent, and consisted of the

[1] James C. Stone, *Teachers for Tomorrow's Children*, Bulletin, California State Department of Education, vol. 25, no. 2, June 1956, p. 9.

[2] John Dahl, "What Good Are Follow-up Studies?" *California Journal of Educational Research*, vol. 4, no. 4, September 1953, pp. 177-81.

so-called "behavior problems." A second group of 51, or 28 per cent, was referred as being suspected to be mentally retarded. However, only 39 actually were in this classification, with 7 being considered as severely mentally retarded (called "Point 2" children), and 32 being mildly mentally retarded ("Point 1"). Nine children (5 per cent) were physically handicapped by such affiictions as cerebral palsy or rheumatic fever, while 5 others (3 per cent) had speech problems. Three boys and girls (2 per cent) were general health problems in which the school nurse had found evidence of malnutrition. The other large group, 34 or 19 per cent, was said to be educationally retarded.

Services rendered. Of the services rendered by the psychologist, most of the cases, 91 or 51 per cent, were case studies in which the child only was seen. The psychologist administered a complete battery of instruments and provided a full set of data which included the procurement of information from the school nurse, the administrator, and the teacher. However, the parent was not seen in these instances. The psychologist, of course, made contact with the administrator not only with a report but also by a visit after the examination.

The second largest category was the "consultation only" group of 49 or 27 per cent of the total. In these cases the child was not examined, and only one contact was made with a parent, a teacher, or other adult. The consultation was sought because the adult felt that there was a problem with a given child and that some counseling would help in determining what could be done before seeking a referral to an agency. Similar to this category were the self-referrals, consisting primarily of secondary students and parents, which numbered 6 or 3 per cent. Perhaps the most time consuming were those students classified as "case study and consultation." Thirty-four students (19 per cent) were not only studied completely and a case study developed on each person, but the parents, teacher, administrator, and the child were contacted.

Disposition of cases. Cases generally went to several resources, for in no instance was the child ever referred to one single resource. (See Summary of Disposition of Reports.) For illustration, of the 180 cases, all administrative personnel received a summary of the study or consultation, even if the child had been referred by another agency. The general curriculum supervisor received many; the general secondary coordinator received reports, along with the administrator and/or teacher or individuals. Twenty were referred for "Point 1" classes; twelve were Point 1 but had no transportation. What measures could be facilitated in the school district in which they lived were effected through the use of other educational specialists. Seven children represented "Point 2" cases. Usually these remained at home, or effort was made to refer the family to an agency for institutionalization of the child.

Summary of Distribution of Reports on Cases

Referral made to:	*Number*
1. Administrative personnel of schools	180
2. General Curriculum Supervisor	112
3. Health Supervisor	76
4. Child Welfare and Attendance Supervisor	52
5. "Point 1" Program	20*
6. Probation Department	16
7. Secondary Coordinator	13
8. Clinics	10
9. Family health advisors	10
10. Crippled Children Services	8
11. State Hospital	7
12. "Point 2" Program	7
13. Mental Hygiene	5
14. Welfare Department	5

*** 12 of these children had no transportation and were helped by specialists.**

Evaluation. The evaluation of these cases was made in January and May, 1956. Of the 180 cases, 22 transferred out of the county; 39 were mentally retarded and referred to special facilities; and 15 were probation cases which required special action also. This left a balance of 103 children which remained to be dealt with in elementary and high schools.

The psychologist then sought to determine during the follow-up periods whether the reports had ever been actually seen by the teacher. Of the case reports, 81 were seen and 22 were not seen by teachers. Of the teachers who had seen 81 of the case reports or summaries, the question was then asked whether they had used the recommendations at the end of the report. Sixty-seven case records were actually utilized by the teachers, while twenty-two did not use the reports. A number of reasons were given for not using the recommendations. For example, some teachers, due to inadequate training, were unable to meet some of the technical requirements or methods or materials recommended. Other teachers were too impatient, and merely wanted the child out of the class. Still others believed that because of class size and inability to procure materials and lack of administrative support the reports could not be used. "Did the child show

academic or social improvement?" was then asked of the teachers of these 67 children. The answer was "Yes" for 66 and "No" for one.

Conclusions

1. Of particular significance in the evaluation, 22 reports were never seen by the teachers. Since reports were originally sent to the administrator, this was essentially his responsibility. In 22 cases this was not assumed after making use of a specialist.

2. If psychological reports were specific and direct in their recommendations, they served as an in-service guide for the teacher and it was found that such reports do result in a significant change of behavior for the child.

3. Emphasis on follow-up alerts districts to the sharing of responsibilities on various problems.

4. Follow-up identifies the strength and liabilities of educational personnel within a school district.

5. Findings from this follow-up led to the need for screening in many cases prior to the referral to the psychologist. It would not have been necessary to refer many of these cases if a pre-conference had been held.

6. Follow-up assisted in determining some of the in-service problems of some districts. This information was deferred to the educational consultant who then sought to deal with these problems.

7. The follow-up provided the County Superintendent by whom the psychologist was employed objective evaluation of how well such services were being used by districts. It also indicated this to be an essential phase of the psychologist's job.

Outcomes

1. Because some districts did not use services well, a Guidance Committee (made up of the psychologist, school nurse, Child Welfare and Attendance Supervisor, general supervisor) was made available from the County Superintendent's office for a pilot study to assist teachers and administrators in screening and discussing problems and to encourage a monthly follow-up.

2. One administrator offered his district for the pilot study. The pilot study has encouraged county guidance services in this way: a. The number of cases in the pilot district were reduced to nearly half the number the psychologist had seen the previous year. b. Administrators from other districts were invited to observe the Guidance Committee in action with teacher and administrator. Outcome? Eleven districts requested this service for the following year.

Some Reactions of Experienced Teachers To Their Professional Training

JOHN A. BROWNELL

What do teachers think of their professional training? Spurred on by the annual California Teachers Association evaluation by first year teachers and the California Council on Teacher Education report in *California Schools,* August, 1956[1], a TEPS committee of a high school district decided, with the investigator's assistance, to sample reactions of teachers in their district for committee study and action. A questionnaire was developed and distributed to faculty members in two high schools in the district. The 87 fully completed questionnaires represented reactions of teachers with from one to twenty years of experience, with training in virtually every Southern California teacher training institution, ten different states, and two foreign countries. Many of those replying were engaged in graduate study in education in California institutions. Of the items in the questionnaire, only those generally pertinent to teacher training in this state will be reported and discussed .

The State Department of Education requires a minimum of twenty-two units of upper division and graduate work in professional education courses for the General Secondary Credential.[2] The committee wished to sample opinion regarding the requirements for course work in education. Teachers were asked to rate which of the required areas were "most valuable for

[1] Reference is made to addresses by Arthur F. Corey, John C. Whinnery, Peter L. Spencer, and William A. Brownell delivered on April 6, 1956 to the California Council on Teacher Education. Addresses were reported in *California Schools,* Vol. XXVII, No. 8, August 1956, pp. 284-93.

[2] *California Administrative Code, Title 5, Education,* Article 6, Section 241, Sacramento, State of California, Documents Section.

John A. Brownell, currently Assistant Professor of Secondary Education at Long Beach State College, received his doctorate at Stanford University. Prior to his present position, Dr. Brownell taught at Punahou School in Hawaii and at Whittier High School.

you" and which areas were "least valuable." The responses for the required areas were as follows:

TABLE I

Opinions of Teachers in One California School District Regarding Required Education Courses

Requirements for General Secondary Credential	*Most Valuable*	*Least Valuable*
(1) The scope and function of the secondary school	6.7	71.7
(2) Growth and development; the learning process; mental hygiene	40.0	18.3
(3) Counseling and guidance	25.0	18.3
(4) Curriculum; Methods; evaluation of instruction at the secondary level	23.3	28.3
(5) Directed teaching	75.0	0.0

The two most significant responses seem to be the overlapping support for the value of student teaching and the strong negative reaction to the scope and function area usually covered under such course titles as Principles of Education, Principles of Secondary Education. or Secondary Education. Growth and development, mental hygiene, and the learning process received the second highest favorable response, while the area of curriculum, methodology, and evaluation was the second of the "least valuable" areas. Another item in the questionnaire, associated with this response, offered some evidence related to course work in methodology. When asked, "Do you feel that the professional courses which you took in getting your credential prepared you to do the associated things which must be done in the classroom—for example, management of the classroom and discipline?" only 26.4 per cent replied Yes, while 73.6 per cent said No. Interestingly enough, this opinion corresponds to some ideas expressed in the issue of *California Schools,* August 1956, by John C. Whinnery.

Whatever the bases for the reactions to the required course areas, they are at best mild in support of what might be termed the theoretical foundation for many teacher training programs. These responses might suggest that functional aspects of methods courses related to classroom management and discipline, need a close examination, or, perhaps, the effectiveness of instruction and the content of principles courses should be questioned. It certainly could be argued that a knowledge of the heritage, development, and the operation of free, public high schools should deserve some other rank than "least valuable."

Since student teaching received such warm support, it might help to report other responses related to this area of professional training. The practice of many teacher training institutions is to require student teaching

in both teaching major and minor areas. When queried with respect to this practice, the teachers replied: In Favor—91.8 per cent; Opposed—8.1 per cent. In an attempt to assess the worth of student tteaching, 44.8 per cent responded that the experience was complete and practical; 47.1 per cent that it was practical in itself; but 8.1 per cent felt that it was lacking in practicality. Also the length of time spent in student teaching was evaluated. Only 4.6 per cent believed that the time was too long; 47.2 per cent considered the length of time as just right; but 48.2 per cent felt that it was too short. In assessing these results it might be concluded that even though some aspects of student teaching might be improved, on the whole it is practical, that the six required semester units, whether spread over two semesters or concentrated in one, might be expanded without serious objection, indeed, with considerable support.

Other items from the questionnaire invite attention. For example: When asked, "Do you feel that your subject matter preparation has been as exhaustive as your teacher training eperience?" 60.9 per cent replied Yes; 28.8 per cent No; and 10.3 per cent No Opiniion. To complete minimum requirements for a major and minor for the General Secondary Credential, one must obtain 56 semester hours of credit in subject areas commonly taught in public high schools. Although a majority feels that this is sufficient preparation, a strong minority does not.

The following responses were given to the question, "Are you now teaching a majority of courses in your major field, minor field, or neither your major or minor field?" in major field, 71.3 per cent; in minor field, 11.5 per cent; in neither, 13.8 per cent. In response to the question "Have you ever taught courses outside your major or minor field?" 61 per cent replied Yes, and 39 per cent No. Certain discrepancies in the replies to these two items raise queries. For instance, does current practice of assignments in the schools differ significantly from former years? Is it a procedure of administrators to recognize teacher interest and desire for particular courses? Could it be that as teachers gain in seniority they are given preferential assignments? In any case, the "neither" and "no" categories, however, are large enough to raise questions concerning teacher competence in certain classes.

Support for high standards among California teachers was indicated by responses to these two items: "Do you think teachers who are credentialed in other states should, upon coming to California, be asked to take courses they lack and which are required by our state *before* they get a California credential?" Yes, 87.3 per cent; No, 6.9 per cent; No Comment, 5.8 per cent, "Do you think it is all right to accept, as members of our faculty, teachers with provisional credentials?" Yes, 13.8 per cent; Sometimes, 66.7 per cent; Never, 19.5 per cent. Although this study is limited, one cannot help but speculate if similar feelings exist in other schools throughout the state. Would it be presumptuous to question the relationship of faculty

harmony and morale to the number of persons holding provisional credentials?

In response to the question "What criteria do you think should be used in the screening of teachers?" many suggestions were offered. These suggestions have been grouped and arranged in rank order with the number indicating the frequency of mention:

Subject matter, liberal arts background and scholarship (39) was the most frequently listed item. Others in order were as follows: personaltiy characteristics such as personal warmth and sense of humor (22), interest in children (17), professional education courses (14), and good mental health (11). Since, by law, all teacher training institutions must screen candidates for credentials, and all districts do some screening during hiring processes, these criteria are especially valuable. They reflect the talents and qualities which teachers would like in new colleagues on their faculties. If the sample in this brief study is somewhat representative of California high school teachers, a knowledge of subject matter, with attendant proficiency, is judged considerably more important than professional training in education.

If this group of teachers be any criterion for the profession, this study is rewarding, but not cheering. Apparently teachers are not as satisfied with their professional training, nor as convinced of its effectiveness, as could be desired. Two courses of action may be taken. We may discount these reactions, or we may examine the substance of them for the underlying reasons. The latter course seems the wiser.

Mental Ability of Freshmen

(Continued from page 73)

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Book Reviews

THE CHALLENGE OF CHILDREN

By the Cooperative Parents' Group of Palisades (California) Pre-School Division and Mothers' and Children's Educational Foundation, Inc.

New York: Whiteside, Inc., and William Morrow and Co., 1957. 192 pages. $3.75.

This is one of the most refreshing books to come from the press in the last few years. To begin with, it is stimulating in the way it is produced. A group of parents in a cooperative nursery school wrote the materials as a result of their experiences and discussions about their children. It is enlightening, too, to read a frank presentation of such things as religion without the usual emotional appeal or the reference to education and its moral and spiritual values. Finally, it is rewarding to note the emphases placed on the unique characteristics of each child especially in an age where conformity seems to be the necessary item.

Although the approach to education advocated in the book is not necessarily novel, the thinking and general approach is similar to Ernest Ligon's character education studies. For example, "the attitude that difficulties in life are opportunities for further growth needs to take root and grow in the child," is a quotation which might have come from any of Ligon's ideas. Although there are many dissimilarities between these two, one cannot help but speculate that the writers of this volume have been influenced by the Union College studies.

In addition to the method of writing, the book has other attractive features. Parents could benefit from reading the section on effects of environment. "Parenthood," the book points out, "truly tests our whole concept of and outlook on life. Our sense of values is always on trial." Again, "when the things we do for [a child] or with him, are done with understanding and deep affection, love and happiness are called out in his life." The writers indicate the primary functions of the family in teaching how to get along with one's neighbors. It is through mutually helping, working, appreciating and understanding each other that children gain their first impressions of group relationships. The parents' role in the child's education is clearly stated; the parents must place themselves as pivotal figures in the child's life. It is the parents' duty to create in each child the desire which will make children eager to achieve the highest spiritual values of life. Such values include integrity, which "cannot be banked

like money and passed along intact from the dead to the living. It must be minted fresh in each new life."

Although the book could probably be used as reference material in a secondary or collegiate course, it should be read by every prospective parent.

The Editors Say:

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any monetary allowance, it is probably a gift from an eleemosynary organization. "New" developments are left entirely to the discretion of the department, which can be done at "slack times" with little or no additional personnel. However, there is some similarity between industrial and educational research, for they both employ staffs possessing highly technical skills with years of experience and holding advanced professional degrees. But it is only in the kind of staff personnel that there is a similarity. Educational research departments do not perform to any great extent the kind of research that industrial firms believe is necessary for progress.

We should not be critical of educational research departments and caustically remark that they are engaged in worthless tasks. This is not true. As any school teacher or administrator will testify, the research department is vital to the operation of a school system. The point is that the functions these departments perform are of an operational nature—not those primarily seeking new procedures and methods. If you examine the actual money allotted in educational research budgets for "new" research, eliminating gifts from foundations, there is virtually none. If it is true that progress depends on research, one cannot help but speculate on how progress in education is to be made and what is to happen in the future if the same course of action is maintained. Consider again Admiral Rickover's remarks. Think of the billions of dollars expended yearly on rocket research. Recall the amount of money industry is spending on finding new and better products and procedures. There is only one conclusion. Education is not allotting sufficient money for the type of research which will eventually produce a better school system.

You can truthfully say that the situation is "hair curling." J.H.B.